Fundamental of Submarine Cables: Undersea Communication

27 September – 1 October 2027
Amsterdam (Netherlands)



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Why This Course

Submarine cables are the backbone of global telecommunications and power networks, connecting continents and enabling the digital economy. This intensive 1-week program equips participants with in-depth knowledge of submarine cable systems, from design and installation to maintenance and emerging technologies. Combining theoretical foundations with practical insights, the course prepares professionals to contribute effectively to submarine cable projects and stay ahead in this critical industry.

What You'll Learn and Practice

By attending this course, you will be able to:

- Understand the fundamental principles and components of submarine cable systems.
- Apply cable design, manufacturing, and testing processes for reliable installations.
- Master marine survey, cable laying, and shore-end operation techniques.
- Perform system operation, maintenance, and fault detection procedures.
- Explore emerging trends and innovations shaping the future of submarine cable technology.

The Program Flow

Day 1: Introduction to Submarine Cables

- History and importance of submarine cables
- Types of submarine cables: power and telecommunication
- Overview of the global submarine cable network
- Cable system architecture: wet and dry plants

Day 2: Cable Design and Manufacturing

- Principles of cable design and material selection
- Optical fiber technology for submarine applications
- Manufacturing processes and quality control
- Testing procedures and international standards



Day 3: Installation and Marine Operations

- Marine surveys and route planning
- Cable laying techniques and specialized equipment
- Shore-end operations and landing stations
- Environmental considerations and regulatory compliance

Day 4: System Operation and Maintenance

- Power feed equipment and monitoring systems
- Fault detection and localization techniques
- Repair procedures and specialized vessels
- Cable protection strategies and best practices

Day 5: Future Trends and Emerging Technologies

- Capacity expansion with SDM and multicore fibers
- Integration with 5G, IoT, and next-generation networks
- Environmental sensing and disaster warning applications
- Economic, regulatory, and geopolitical aspects of submarine cables

Individual Impact

Participants will leave this program with:

- Practical skills to contribute to submarine cable project planning and execution.
- Expertise in optimizing cable system performance and reliability.
- Knowledge of emerging technologies and innovations in submarine cable networks.
- A clear understanding of the global submarine cable market and industry trends.

Organizational Impact

Organizations will benefit from:

- Enhanced ability to plan and manage submarine cable projects effectively.
- Improved operational reliability and fault management for cable systems.
- Insights into emerging technologies to support future network expansion.
- Strategic awareness of market, regulatory, and geopolitical factors affecting submarine cables.



Training Methodology

- Interactive lectures and technical demonstrations
- Real-world case studies and scenario-based problem solving
- Group discussions and collaborative exercises
- Practical application of design, installation, and maintenance concepts

Beyond the Course

By the end of this 1-week program, participants will be ready to:

- Plan, install, and maintain submarine cable systems with confidence.
- Apply advanced techniques for fault detection and system optimization.
- Integrate emerging technologies into submarine cable projects.
- Understand the strategic and economic context of global submarine cable networks.

